Newly Recognized Neurologic Features of West Nile Virus Infection—Louisiana, 2002

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West Nile Virus (WNV)

- Before 1996
  - Outbreaks infrequent
  - Mild febrile illness
  - Central nervous system (CNS) involvement rarely reported
- Since 1996
  - Outbreaks more frequent
  - More CNS illness, higher case fatality rates

Clinical Features of WNV-Associated CNS Illness

- Previous studies have limitations
  - Methodology of retrospective chart review
  - Lack of standardized assessment
- Few descriptions of long-term effects
- Better recognition could improve surveillance capability, patient care

Objectives of Case Series

- Describe features of CNS illness
- Assess initial levels of neurologic impairment for future comparison

Methods

- Collect standardized data
  - Prospective data collection
  - Single detailed instrument
  - Limited number of trained observers
- Conduct serial assessments
  - Initial functioning (<48 hrs)
  - Short-term outcome (7–10 days later)
  - Long-term effects (4, 8, and 12 months)

Case-Patient Selection

- Aug 1 – Sep 2, 2002
  - From 7 hospitals serving St. Tammany, LA
  - Patients with suspect WNV infection reported to the LA Office of Public Health
- 16 confirmed with WNV infection
  - WNV RNA in acute CSF or serum, or
  - WNV-specific IgM antibodies in CSF, or
  - WNV-specific IgM antibodies in paired sera

Illness Classification

- West Nile meningitis (WNM) — meningeal inflammation
- West Nile encephalitis (WNE) — mental status changes
- Acute flaccid paralysis (AFP) — sudden weakness of arms/legs

Age Distribution

CNS Involvement	n	Median Age (Range)
WNM	5	36 yrs (20–39)
WNE	8	69 yrs (46–81)
AFP	3	56 yrs (46–69)

Tremor (15/16)

- Upper extremities, asymmetric
- Postural and kinetic
- Occasionally interfered with activities such as grooming or eating

Myoclonus (10/16)

- Uncontrolled muscle contractions
- Upper body (eg, facial twitching)
- Often more prominent at night

Parkinsonian Features (11/16)

- Included cogwheel rigidity, bradykinesia, and postural instability
- No resting tremor

Acute Flaccid Paralysis (3/16)

- Focal weakness of arms/legs
  - Rapid onset
  - Asymmetric
  - Loss of reflexes
  - No pain or sensory changes
- Elevation of CSF protein and WBC count

WNM and WNE Outcomes

- One WNE patient remained on ventilator for 4 months, then died
- Other 12 WNM and WNE patients at home
  - Moderate difficulty resuming previous activity level due to fatigue, headaches, inability to concentrate
  - Pregnant patient delivered healthy baby

AFP Outcomes

- All 3 AFP patients initially discharged to long-term care facility for rehabilitation
  - Have since returned home
- Unable to return to work as of Mar 2003
  - Continued paralysis

Discussion—WNV and Movement Disorders

- Tremor, myoclonus, and parkinsonian features prominent, even in WNM patients
- Not discussed in contemporary literature
  - Related Japanese encephalitis associated with parkinsonian features
- Neuroimaging and pathology
  - Propensity of WNV for movement centers?

Discussion—WNV and AFP

- Previously attributed to Guillain-Barré
  - Also mistaken for stroke, myopathy
  - Despite clinical features and CSF WBC
- Treatment and diagnostic modalities included IVIG, heparin, muscle biopsies
- Electrodiagnostics
  - Spinal anterior horn cells (a poliomyelitis)

Limitations

- Selection bias
  - Hospitalized patients had more severe illness
- Generalizability
  - Limited numbers
  - One geographic area during one epidemic

Summary

- High prevalence of movement disorders
- Description of WNV-associated AFP
- Study of long-term outcomes and effects on quality of life still under way, but suggests lingering difficulties

Recommendations

- Surveillance for WNM, WNE, and AFP as distinct entities
- Better clinical recognition of WNV-associated AFP
  - Could prevent unnecessary, potentially harmful, therapies
  - Would facilitate public health surveillance of this emerging clinical syndrome

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